

BULLETIN

OF

MISCELLANEOUS INFORMATION.

No. 3.]

[1905.

ON KICKXIA AND FUNTUMIA.

The genus, generally known as *Kickxia*, was originally described as *Hasseltia* by Blume in 1825 (*Bijdr. Fl. Ned. Ind.* p. 1045) from a tree indigenous in Java. Finding subsequently that this name had already been given by Kunth (*H. B. & K., Nov. Gen. et Spec.* vii. p. 231) to a Tiliaceous plant, he changed it into *Kixia*, (*Fl. Java*, Præf. p. vii., 1828), in dedication to the Dutch botanists Jean Kickx (latinised Kixius), father and son. This mode of spelling was generally in use (see Endlicher, Meissner, De Candolle, etc.) until Blume himself in 1848 altered it into *Kickxia* (*Rumphia* iv. p. 25). Lindley used the form *Kixia* as late as 1853 (*Veg. Kingd.*, 3rd ed., i., p. 601); but with his exception, *Kickxia* has been so universally adopted that it would be pedantry to fall back on the original form *Kixia*, although this is no doubt more pleasing to the eye of a scholar. So much as to the name *Kickxia*.

A second Malayan species, *K. Blancoi*, a native of the Philippines was added to the genus by Rolfe in 1884 (*Journ. Linn. Soc.* xxi. p. 313), and a third species by Koorders from Celebes in 1898 (*Mededeel. 'S Lands Plantent.* xix. p. 528). If we further add a species from Sarawak, in Borneo, which I described and figured in *Hooker's Icon. Plant.* t. 2693, as *K. borneensis*, the number of Malayan species of *Kickxia* is brought up to four.

Previous, however, to the discovery of these last three species, Bentham and Hooker recorded in 1876 (*Gen. Plant.* ii. p. 721) a species from West Africa which was subsequently described and figured by Bentham in *Hooker's Icones Plantarum* t. 1276 (1879) as *K. africana*. Quite recently six more species have been described under *Kickxia*, namely, *K. latifolia*, Stapf (*Kew Bull.* 1898, p. 307) from the Congo, *K. elastica*, Preuss (*Notizbl. Bot. Gart. u. Mus. Berlin*, ii. 1899, p. 353), from the Cameroons, *K. Scheffleri*, K. Schum. (*Notizbl. Bot. Gart. u. Mus. Berlin*, iii. 1900, p. 81) from German East Africa, *K. Zenkeri*, K. Schum. (l. c.) from the Cameroons, *K. Gilletii*, De Wild. (*Rév. Cult. Colon.*

vii. 1900, p. 744) from the lower Congo, and *K. congolana* De Wild. (l. c. p. 748), also from the lower Congo. Of these, however, the four last named species have, on closer examination, been found to be identical with *K. africana* and *K. latifolia* respectively.

Taken in the sense of the Genera Plantarum and all the modern authors, the genus *Kickxia* would therefore appear to inhabit two widely remote areas—one in the Malayan region, with four species, and the other in tropical Africa, with three species. Cases of similar discontinuous distribution are not altogether unknown in *Apocynaceae*; but they are rare. Of the 100–105 Apocynaceous genera which inhabit the tropics of the Old World, only 12 are common to Africa and Asia, and of these five do not extend from the Indo-Malayan region farther west than the Mascarene Islands or the East Coast of Africa, whilst one (*Wrightia*) is known to occur in Africa only in Natal. The remaining six genera (*Carissa*, *Rauwolfia*, *Alstonia*, *Voacanga*, *Holarrhena* and *Strophanthus*) may be said to range fairly continuously over the greater part of tropical Africa; they are found in the Mascarene Islands and again (excepting *Voacanga* which is not known from India proper) in Ceylon and Western India, whence they spread more or less into the Malayan region. One of them is, moreover, represented by numerous species in the New World, namely, *Rauwolfia*. This distinct differentiation of the genera of *Apocynaceae* in the African and the Indo-Malayan region suggests an independent evolution of the order in the two areas for a very long time.

A glance at the Malayan species of *Kickxia* is sufficient to show that the case of *Kickxia* is no exception to this theory. In fact, the geographical separation of the two groups coincides with an equally conspicuous morphological differentiation. I stated this very summarily before the Linnean Society more than five years ago (*Proc. Linn. Soc., December 7, 1899*), and a little more fully in *Hooker's Icones Plantarum*, sub t. 2694–2495. To make, however, the matter perfectly clear, I will place side by side the diagnoses of the two groups, as drawn from the material in the Kew Herbarium.

MALAYAN GROUP.

Calyx ad basin 5-partitus, intus glandulis munitus, persistens; segmenta imbricata, anguste vel late ovata, acuta vel obtusa; glandulæ numerosæ, annulatim dispositæ, fimbriiformes, aut singulæ cum unoquoque segmento eique arte appressæ, applanatæ.

Corolla infundibuliformis, magna vel majuscula; tubus ad vel supra medium constrictus, infra e basi subventricosa cylindricus vel gradatim attenuatus, supra cupulæ vel campanulæ modo ampliatus, ad constrictionem magis minusve incrassatus et annulo intus prominente munitus, lobi oblongi, magis minusve obliqui, præfloreatione dextrorsum obtegentes.

AFRICAN GROUP.

Calyx ad basin 5-partitus, intus glandulis munitus, persistens; segmenta imbricata, lata, magis minusve obtusa; glandulæ numerosæ vel paucæ, semper applanatæ, segmentis appressæ.

Corolla hypocraterimorpha, parvula; tubus brevis, medio vel paulo supra medium ventricosus, superne crassissimus, carnosus, ore annulo crasso prominente cincto pariformi; lobi lineares vel oblongi, præfloreatione dextrorsum obtegentes.

Stamina 5, annulo tubi inserta, in conum circumcirca liberum in tubum ampliatum projectum conniventia; filamenta brevissima, crassa; antheræ sagittatæ, intus basi glandula viscosa munitæ, cruribus duris solidis filamentis æquilongis, loculis angustissimis brevibus.

Discus breviter tubulosus, subinteger vel 5-lobus, tenuiter carnosus.

Carpella libera, ovato-lanceolata, sensim in stylum attenuata, e disco exserta, glaberrima; styli filiformes, supra coaliti; stigma ovoideo-clavatum, ope antherarum glandularum cono staminali adhaerens; placenta ad basin bipartitæ, lamellis liberis patulis facie dorsali ovulis multiserialiter obsitis.

Fructus folliculi distincti, elongati, reflexi, paralleli, coriacei, secundum suturam dehiscentes; placenta maturæ fragiles vel facile separata, inflexæ.

Semina plurima, elongato-fusiformia, subsemiteretia, sicca quidem ventre canaliculati, basi coma stipitata reversa plumosa ornata; raphe filiformis, prominula; testa tenuis; albumen carnosum strato tenui embryonem circumdans.

Embryo elongatus, subsemiteres; radícula supera, longiuscula; cotyledones foliaceæ, longitudinaliter contortuplicatæ.

Arbores vel frutices.

Folia membranacea et decidua vel magis minusve coriacea.

Flores magni vel majusculi, 3.75–10 cm. ($1\frac{1}{2}$ –4 poll.) longi, in cymas axillares paucifloras vel ad florem solitarium reductas dispositi, longe vel brevissime pedicellati, albi vel inferne virescentes vel flavescens.

Stamina 5, in medio tubo inserta, in conum os rix attingentem arcte inclusum conniventia; filamenta brevissima, crassa; antheræ sagittatæ intus basi glandula viscosa munitæ, cruribus duris solidis quam filamentis sublongioribus; loculis angustissimis brevibus.

Discus breviter tubulosus, 5-lobus vel 5-partitus, carnosus.

Carpella libera, brevia, truncata, lateraliter abrupte in stylum constricta, e disco exserta vel ab eo paulo superata, vertice puberula; styli filiformes, supra coaliti, incrassati; stigma ovoideo-clavatum, ope antherarum glandularum cono staminali adhaerens; placenta ad basin bipartitæ, lamellis carpelli lateri ventrali plane adnatis facie dorsali ovulis multiserialiter obsitis.

Fructus folliculi distincti, breves vel elongati, divaricatim patentes, coriacei vel lignosi, secundum suturam dehiscentes; placenta maturæ tantum zona angusta rugulosa utrinque secundum suturam percurrente indicata, ceterum a folliculi pariete haud distincta.

Semina plurima, fusiformia, subsemiteretia, basi coma stipitata reverse plumosa ornata; raphe filiformis, prominula; testa tenuis; albumen carnosum strato tenui embryonem circumdans.

Embryo elongatus, subsemiteres; radícula supera, longiuscula; cotyledones foliaceæ, longitudinaliter contortuplicatæ.

Arbores.

Folia sempervirentia, coriacea.

Flores parvuli, 12–20 mm. (6–10 lin.) longi, numerosi in axillis foliorum, cymoso-congesti, breviter vel brevissime pedicellati, albi vel flavescens.

A comparison of these two descriptions shows most convincingly that the differences in the characters of the two groups are as great as those of any two genera in the tribe of *Echitideæ*, and that they have every claim to be considered as two distinct genera. Hence the name *Kickxia* will have to be kept for the Malayan group. For the African species, referred hitherto to *Kickxia*, I have proposed the name *Funtumia*—from “Funtum” or “O’Funtum,” a vernacular name of the rubber-yielding species of the Gold Coast, Lagos, and the Cameroons (*Proc. Linn. Soc.*, Dec. 7, 1899).

The two genera are so different that it would be difficult to understand how they could ever have been united if it were not for one very peculiar character which is common to both, namely the presence of a “basal” awn to the seeds. That feature is

unique in the order, and it seems to have outweighed all the considerations which must have tended towards the separation of the genera. The authors of the *Genera Plantarum* may have hesitated to separate the African "*Kickxia*" from the Malayan for want of sufficient material; at any rate, their diagnosis of *Kickxia* agrees very well with Blume's description of his genus, but scarcely fits the African plant referred to it. The latter, indeed, appears rather as a kind of appendix to the former, no better place having been available for it for the time.

The development of a flying apparatus in the shape of a tuft of hairs or a plumose awn attached to the seeds is a universal contrivance in *Echitideæ*. The tufts spring either from the chalazal end of the seed, and then they are termed basal, or from the micropylar end, when they are styled apical, or they originate from both ends. Sometimes they are transformed into plumose awns by the lengthening of the axis of the tuft, and often also by the intercalation of a naked stalk between the seed proper and the plume. The commonest form is an apical tuft. Basal tufts without apical ones are characteristic of *Wrightia*; basal and apical tufts occur together in *Isonema*, *Adenium*, and *Haplophyton*; apical awns and basal tufts together are found in all the numerous species of *Strophanthus*; basal awns alone in *Kickxia* and *Funtumia*. Where two tufts or a tuft and a plumose awn occur simultaneously, the basal tuft is often early deciduous, and does not leave the follicle with the seed; nevertheless its occurrence proves that there is a more general disposition towards developing the flying contrivance from the chalazal end of the seed than is generally assumed. At the same time we see that the presence of this peculiar disseminative organ is not confined to genera which are admittedly close allies, as a glance at the different attempts to group the genera of *Echitideæ* will show. To summarise briefly, the basal awn of the seeds of *Kickxia* and *Funtumia* is unique in the order in so far as in no other case known, the evolution of the basal flying contrivance has been carried to this peculiar modification, but it has its homologue in several not closely allied genera, and therefore cannot be considered as a character in itself indicative of close relationship.

What is true of the basal awn may be said of the apical plumose awn of *Strophanthus*, *Laubertia*, *Stipecoma*, *Urechites*, etc. It is the homologue of the usual apical tuft of the majority of *Echitideæ*, and occurs also in genera otherwise not closely linked together.

It is quite conceivable that the basal awns in *Kickxia* and *Funtumia* have been evolved from the basal tufts of two types which had little else in common than those characters which bind *Echitideæ* together. Hence, to solve the question as to the relationship of the two genera and their place in the natural system of *Echitideæ* we must look out for other characters. Both genera possess an embryo with contortuplicate cotyledons, a feature almost as unusual in the order as the basal seed-awn, flat foliaceous or planoconvex cotyledons being the rule. So far as I know, the genera *Wrightia* and *Holarrhena* are the only ones

in the order which have cotyledons of the same description, but here again we have a character which, taken by itself, points to two different lines of descent, as *Wrightia* and *Holarrhena* have otherwise so little in common that *Wrightia* has been placed in *Echitideæ* and *Holarrhena* in *Plumeriaceæ* where it occupies a somewhat anomalous position. We should not fare better with any other character if taken alone, although anyone might form a convenient basis for a purely artificial arrangement. *Echitideæ*, like the majority of *Tubifloræ*, are rich in ill-defined genera, and in instances of parallelism which makes it so difficult to trace their phylogenetic relations. To do this satisfactorily is beyond the scope of the present paper, as it would involve a critical revision of the whole tribe of *Echitideæ*; for it is only from a thorough and comprehensive investigation into the structure of the genera composing the tribe that we may hope to solve the intricate problem of their mutual relationship.

If I may venture to suggest a place for *Kickxia*, it would be near *Wrightia*. The suggestion is not new; it was made by Blume in *Rumphia*, iv. p. 26, on account of general resemblances, and by Miers in his essay "*On the Apocynaceæ of South America*," p. 9, on account of the great similarity of the fruits and seeds. I have already pointed out the homology of the basal tuft of the seeds of *Wrightia* and of the basal awn of *Kickxia*, and the practical identity of the structure of the embryo in both genera. Neither of these characters by itself is of very great taxonomic importance; but when they appear combined, and coincide besides with a general parallelism in the structure of the flower and fruit, they become indicative of a closer relationship of the genera. This is, indeed, to a certain degree the case with *Wrightia* and *Kickxia*. Certain Malayan species of *Wrightia* approach *Kickxia* rather closely in general appearance, and Blanco was actually misled to enumerate *Kickxia Blancoi* as a species of *Anasser*, a synonym of *Wrightia*. Still there remain these differences:—the æstivation of the corolla lobes is in *Wrightia* the reverse of that in *Kickxia*; the corolla is divided down to the insertion of the stamens and (with, I believe, a single exception) provided there with variously shaped appendages, instead of surrounding the staminal cone with a cup or bell-shaped widening of the tube; and, finally, there is in *Wrightia* no disc surrounding the gynœceum. Pierre has described lately two new genera from Cochin-China, *Microchonea* and *Paravallaris*, which belong possibly to the same stock as the Asiatic species of *Wrightia* and *Kickxia*, so far as I can judge from flowering specimens. As to *Funtumia*, however, the resemblance with *Kickxia* ends with the homology of the seminal appendage and the practical identity of the structure of the embryo. I have, so far, sought in vain for another genus in *Echitideæ* to which it is obviously and closely related. We may place it provisionally near *Kickxia* if we lay more stress on the character of the seed in our at present rather artificial arrangement of *Echitideæ*, or among *Eu-Echitideæ* on account of the structure of the flower. In either case it will occupy an isolated position.

DESCRIPTIONS OF GENERA AND SPECIES.

KICKXIA, *Blume*.

Calyx ad basin 5-partitus, intus glandulis munitus, persistens; segmenta imbricata, anguste vel late ovata, acuta vel obtusa; glandulae numerosae, annulatim dispositae, fimbriiformes, aut singulae cum unoquoque segmento eique arcte appressae, applanatae. *Corolla* infundibuliformis, magna vel majuscula; tubus ad vel supra medium constrictus, infra e basi subventricosa cylindricus vel gradatim attenuatus, supra cupulae vel campanulae modo amplius, ad constrictionem magis minusve incrassatus et annulo intus prominente munitus; lobi oblongi, magis minusve obliqui, praefloratione dextrorsum obtegentes. *Stamina* 5, annulo tubi inserta, in conum circumcirca liberum in tubum ampliatum projectum conniventia; filamenta brevissima, crassa; antherae sagittatae, intus basi glandula viscosa munitae, cruribus filamentis aequilongis duris solidis, loculis angustissimis brevibus. *Discus* breviter tubulosus, subinteger vel 5-lobus, tenuiter carnosus. *Carpella* libera, ovato-lanceolata, sensim in stylum attenuata, e disco exserta, glaberrima; styli filiformes, supra coaliti; stigma ovoideo-clavatum, ope antherarum glandularum cono staminali adhærens; placentae ad basin bipartitae, lamellis liberis patulis facie dorsali ovulis multiseriatim obsitis. *Fructus* folliculi distincti, elongati, reflexi, paralleli, coriacei, secundum suturam dehiscentes; placentae maturae fragiles vel facile separatae, inflexae. *Semina* plurima, elongato-fusiformia, subsemiteretia, basi coma stipitata reverse plumosa ornata; raphe filiformis, prominula; testa tenuis; albumen carnosum, strato tenui embryonem circumdans. *Embryo* elongatus, subsemiteres; radícula supera, longiuscula; cotyledones foliaceae, longitudinaliter contortuplicatae.—*Arbores* vel frutices. *Folia* membranacea et decidua, vel magis minusve coriacea. *Flores* magni vel majusculi, in cymas axillares paucifloras vel ad florem solitarium reductas dispositi, longe vel brevissime pedicellati, albi vel inferne virescentes vel flavescentes.

Species 4, in archipelago Malayano et in insulis Philippinis.

Key to the species.

Glandulae intracalyculares numerosae, fimbriiformes, annulatim dispositae.

Folia membranacea, elliptica; flores 6 cm. ($2\frac{1}{2}$ poll.)

longi 1. *arborea*

Folia pergamacea vel coriacea, lanceolata vel lanceolato-

oblonga; flores ad 10 cm. (4 poll.) longi 2. *Wigmannii*.

Glandulae intracalyculares singulae cum unoquoque segmento eique appressae.

Flores distincte pedicellati, 6 cm. ($2\frac{1}{2}$ poll.) longi;

calycis segmenta obtusa 3. *Blancoi*.

Flores brevissime pedicellati, $3\frac{1}{2}$ –4 cm. ($1\frac{1}{2}$ – $1\frac{3}{4}$ poll.)

longi; calycis segmenta acuta 4. *borneensis*.

1. *K. arborea*, *Blume*, *Rumph.* iv. 26, t. 179, fig. 1. *Arbor* mediocris (*Blume*) ad 42 m. (140 ped.) alta (*Koorders*). *Truncus* erectus, cylindricus, basi exalatus, ad 62 cm. (25 poll.) dimetiens; coma parva a basi admodum remota, irregularis, laxa; rami primarii

pauciores, tenues; ramuli juveniles magis minusve compressi, exsiccando atri; cortex extus nigro-cinereus, lævis, medio fuscus, intus albidus; latex albus, copiosus. *Folia* breviter petiolata; lamina elliptica vel oblongo-elliptica, utrinque breviter acuta vel subacuminata vel rotundata, 12–22 cm. ($4\frac{3}{4}$ –9 poll.) longa, 7–12 cm. ($2\frac{3}{4}$ – $4\frac{3}{4}$ poll.) lata, integerrima vel subrepanda, magis minusve undulata, supra glaberrima, intense viridis (exsiccando nigrescens), infra pallidior (exsiccando fusca), imprimis in nervis minute pubescens vel tandem glabrata, membranacea, nervis secundariis utrinque 14–16 patentibus vel oblique ascendentibus sub margine arcuato-connexis, tertiariis venisque tenuibus; petiolus 5–10 mm. ($2\frac{1}{2}$ –5 lin.) longus. *Cymæ* numerosæ, paucifloræ, brevissime pedunculatæ; bracteæ minutæ, ovatæ, acutæ, atropurpurascens; pedicelli graciles, 4–5 cm. ($1\frac{1}{2}$ –2 poll.) longi. *Flores* nutantes, ultra 6 cm. ($2\frac{1}{3}$ poll.) longi, flavescenti-albi, odorati. *Calyx* 5 mm. ($2\frac{1}{2}$ lin.) longus; segmenta ovato-oblonga, acuminata, crassa, basi extus gibba; glandulæ inæquales, fimbriilliformes, in annulum dispositæ. *Corollæ* tubus glaber, e basi ventricosa ad constrictionem cylindricus, viridis, deinde campanulatus, parte inferiore 14–16 mm. (7–8 lin.) longa, ubi angustissima 3 mm. ($1\frac{1}{2}$ lin.) lata, superiore 12 mm. (6 lin.) longa, ore 10 mm. (5 lin.) lata; lobi obtusi, 3.5–4 cm. ($1\frac{1}{3}$ – $1\frac{2}{3}$ poll.) longi, 12–15 mm. (6– $7\frac{1}{2}$ lin.) lati, superne extus subvelutini, cæterum glabri. *Staminum* filamenta viridula, extus glabra, intus basi excepta dense tomentella; antheræ 6 mm. (3 lin.) longæ, flavidæ, glabræ. *Discus* cupuliformis, crenulatus, albidus. *Fructus* folliculi reflexi, paralleli, cylindracei, 60 cm. (25 poll.) longi, extus longitudinaliter striati, diu virides, tandem fuscrescentes. *Semina* 3 cm. ($1\frac{1}{4}$ poll.) longa, arista circa 15 cm. (6 poll.) longa, ad 10 cm. (4 poll.) nuda, pilis ad 7 cm. ($2\frac{3}{4}$ poll.) longis.—A. DC. Prod. viii. 408; Hasskarl in Flora, 1845, 299 (267, err. typ.); Miq. Fl. Ned. Ind. ii. 435; Koord. & Valet. in Mededeel. 'S Lands Plantent. xi. 110; Koord. l.c. xix. 529; Boerl. Handl. Fl. Ned. Ind. ii. 400; non Nav. & Vill. *Hasseltia arborea*, Bl. Bijdr. 1046. *Kibatalia arborea*, Don. Gen. Syst. iv. 86.

JAVA. *Tejsmann! Lobb!* According to Junghuhn (*Java*, i. 236, 237), characteristic of the woods of the dry hot hills of his first zone (upwards to 2,000 ft.), whilst Koorders & Valetton l.c. say that it is rare in the heterogeneous, evergreen primeval forest from 50–350 m. (160–1160 ft.). They quote the following localities from Central and West Java:—Pekalongan, near Soebah; Banjoemas, near Tjilatjap op Noesa-Kambangan; South Preanger, near Palobaehan; Southwest Banten, near Pgr. Tjemara. *K. arborea* sheds its leaves according to Blume in October, immediately before the flowers come out; Koorders & Valetton indicate, however, June and July as the season when it loses the leaves, and flowers.

2. *K. Wigmannii*, Koord. in Mededeel. 'S Lands Plantent. xix. 528. *Arbor* 12–15 m. (40–50 ped.) alta. *Truncus* erectus, cylindricus, basi exalatus; coma laxa, irregularis; rami primarii horizontales, tenues; cortex extus niger, lævis, rimis longitudinalibus, medio fuscus, intus albescens, inodorus; latex albus, sapore amarissimus. *Folia* breviter petiolata; lamina lanceolata vel lanceolato-oblonga, rarius oblonga, basi angustata, symmetrica

vel asymetrica, apice abrupte breviter acuminata, 23 cm. ($9\frac{1}{2}$ poll.) longa, 6 cm. ($2\frac{1}{3}$ poll.) lata, integerrima, subundulata, margine exsiccano revoluta, adulta utrinque glaberrima, juvenilia puberula, viva subcarnoso-pergamacea, exsiccata coriacea vel pergamacea, supra nitida obscure viridia, infra opaca pallidiora, nervis secundariis 8-14 parallelis fere marginem attingentibus, tertiariis venisque tenuibus; petiolus 5 mm. ($2\frac{1}{2}$ lin.) longus. *Cymæ* axillares, paucifloræ (2-floræ); pedicelli 15 mm. ($7\frac{1}{2}$ lin.) longi. *Flores* 10 cm. (4 poll.) longi, albi. *Calyx* 10 mm. (5 lin.) longus; segmenta ovata, acuta; glandulæ numerosae, inæquales, magis minusve per paria vel plures connatæ, in anulum dispositæ. *Corollæ* tubus 32 mm. (16 lin.) longus, ore 10-11 mm. ($5-5\frac{1}{2}$ lin.) latus, intus villosus, extus glaber; lobi anthesi patentes, $\frac{7}{8}$ cm. ($2\frac{3}{4}$ poll.) longi, 22 mm. (11 lin.) lati, glabri. *Staminum* filamenta glaberrima. *Discus* cupuliformis, minute 5-denticulatus, dentibus truncatis crassis apice 2-foveolatis. *Fructus* folliculi 22-29 cm. ($9-11\frac{1}{2}$ poll.) longi, 3.5 cm. ($1\frac{1}{2}$ poll.) lati. *Semina* 30-34 mm. ($15-17$ lin.) longa; arista 6 cm. ($2\frac{1}{2}$ poll.) longa, ad $2-2\frac{1}{2}$ cm. ($\frac{3}{4}-1$ poll.) nuda, pilis ei æquilongis.—Boerl. Handl. Fl. Ned. Ind. ii. 400. *K. Valetonii*, Koord. l.c. 67, 169 (nomen).

NORTHEAST CELEBES. Minahassa, rare in very heterogeneous tall primeval forest, near Paku-ura and Kajoewatoe, between 150 and 500 m. (500-1650 ft.). *Koorders*, 16,045! 16,048! 16,067! Flowering from February to April and maturing the fruits at the same time.

The description of the flower is copied from *Koorders*. There is only one detached and badly preserved corolla with the specimens of *K. Wigmannii* at Kew, and its dimensions are considerably below those given by *Koorders*. The corolla tube is scarcely 24 mm. (1 in.), and the lobes 42 mm. ($1\frac{3}{4}$ in.) long. The larger of the two calyces (also detached) at Kew is about 7.5 mm. ($3\frac{3}{4}$ lin.) long. The stamens are inserted near the base of the corolla tube, which appears to have been cylindric throughout its length, with the exception of a slight constriction below the insertion of the stamens. It is therefore probable that the specimens of *K. Wigmannii* at Kew are either made up of portions belonging to two different plants or that they represent a new genus, or at least a very marked subgenus of *Kickxia*.

3. *K. Blancoi*, *Rolfe in Journ. Linn. Soc.* xxi. 313 (nomen tantum). *Arbor* (?). *Ramuli* juniores graciles, exsiccano nigrescentes *Folia* breviter petiolata; lamina lanceolata vel lanceolato-oblonga, utrinque acuta vel acuminata vel apice obtusa, 5-10 cm. (2-4 poll.) longa, 2-3 $\frac{1}{2}$ cm. (10-17 lin.) lata, integerrima, utrinque glaberrima, exsiccano plus minusve fuscescens, subtus pallidior, pergamacea, nervis secundariis utrinque 5-7 tenuibus obliquis sub margine arcuato-connectis, tertiariis venisque inconspicuis; petiolus 5 mm. ($2\frac{1}{2}$ lin.) longus. *Cymæ* axillares, brevissime pedunculatæ, plerumque ad florem 1 redactæ, rarius 2-floræ; bractæ minutæ, obtusissimæ; pedicelli circiter 12 mm. (6 lin.) longi, graciliores. *Flores* ad 6 cm. longi, albi. *Calyx* 5 mm. ($2\frac{1}{2}$ lin.) longus; segmenta lata, ovata vel rotundata, obtusa, basi extus gibba, intus glandula solitaria applanata rotunda appressa munita. *Corollæ* tubus e basi ventricosa ad constrictionem sensim attenuatus

deinde cupuliformis, glaber, parte inferiore 15–18 mm. ($7\frac{1}{2}$ –9 lin.) longa, ubi angustissima 3 mm. ($1\frac{1}{2}$ lin.) lata, superiore 5–6 mm. ($2\frac{1}{2}$ –3 lin.) longa, ore 7–8 mm. ($3\frac{1}{2}$ –4 lin.) lata; lobi oblique patentes, obtusi, ad 4 cm. ($1\frac{2}{3}$ poll.) longi, 12–14 mm. (6–7 lin.) lati, intus basin versus sparsim papilloso-pilosuli, cæterum glabri. *Staminum* filamenta glabra; antheræ 5 mm. ($2\frac{1}{2}$ lin.) longæ, dorso linea pilosula ad apicem percurrente notatæ. *Discus* subinteger. *Ovarium* cum stylo et stigmate 20–22 mm. (10–11 lin.) longum. *Fructus* ignotus.—Koorders in Mededeel. 'S Lands Plantent. xix. 529. *Kixia arborea* Vill. in Naves & Vill. Nov. App. Fl. Philipp. 132, t. cdxxviii bis, non Blume. *Kickxia* sp. Vidal Sin. Gen. Filip. 188. *Anasser* “otra especie con las flores axillares solitarias” Blanco, Fl. Filip. ed. 1, 114; ed. 2, 81; ed. 3, 149 (in nota).

PHILIPPINES: Luzon, *Lobb!* Prov. Albany, *Vidal*, 3277! Panay, Ilo-Ilo, S. Joaquim, *Vidal*, 3289! Guimaras, *Vidal* teste *Villar*, l.c.

Naves's figure quoted above, agrees exactly with Vidal's specimens, but for the very crudely drawn analyses and the corolla-tube which is much more slender than represented.

K. borneensis, *Stapf*, in *Hook.*, *Icon. Plant.*, t. 2693. *Frutex* 2 m. (6 ped.) altus. *Ramuli* juniores exsiccando nigro-fuscescentes, teretes, subgraciles. *Folia* brevissime petiolata; lamina lanceolato-oblonga, basi subacuta, apice acuminata, 10–11 cm. ($4\frac{1}{2}$ poll.) longa, 3–5 cm. ($1\frac{1}{3}$ –2 poll.) lata, integerrima, glaberrima, supra exsiccando nigro-fuscescens, subtus pallidior, coriacea, nervis secundariis utrinque circiter 9 subpatulis sub margine arcuatim connectis, tertiariis venisque inconspicuis; petiolus 3–4 mm. ($1\frac{1}{2}$ –2 lin.) longus. *Cymæ* axillares brevissime pedunculatæ, paucifloræ vel ad florem solitarium redactæ; bracteolæ minutæ, obtusæ; pedicelli brevissimi. *Flores* $3\frac{3}{4}$ –4 cm. ($1\frac{1}{2}$ – $1\frac{2}{3}$ poll.) longi. *Calyx* 5–6 mm. ($2\frac{1}{2}$ –3 lin.) longus; segmenta ovata, acuta, basi extus gibba, intus glandula solitaria oblonga applanata appressa munita. *Corollæ* tubus e basi subventricosa ad constrictionem cylindricus, deinde campanulatus, parte inferiore 12 mm. (6 lin.) longa, ubi angustissima 3 mm. ($1\frac{1}{2}$ lin.) lata, glabra, superiore 10 mm. (5 lin.) longa, ore 6–7 mm. ($3\frac{1}{2}$ lin.) lata, intus sparsim papilloso-pilosula; lobi oblique porrecti, obtusi vel subacuti, 12 mm. (6 lin.) longi, 3–4 mm. ($1\frac{1}{2}$ –2 lin.) lati, intus basin versus sparsim papilloso-pilosuli, cæterum glabri. *Staminum filamenta* glabra; antheræ 5 mm. ($2\frac{1}{2}$ lin.) longæ, apicem versus in dorso sparse pilosulæ. *Discus* inæqualiter 5-partitus. *Ovarium* cum stylo et stigmate 14 mm. (7 lin.) longum. *Fructus* folliculi 15 cm. (6 poll.) longi, coriacei, extus longitudinaliter striati. *Semina* ignota.

BORNEO. Sarawak, *Lobb!*

FUNTUMIA, *Stapf*.

Calyx ad basin 5-partitus, intus glandulis munitus, persistens; segmenta imbricata, lata, magis minusve obtusa; glandulæ numerosæ vel paucæ, semper applanatæ, segmentis appressæ.

Corolla hypocraterimorpha, parvula; tubus brevis, medio vel paulo supra ventricosus, superne crassissimus, carnosus, ore annulo crasso prominente cincto poriformi; lobi oblongi vel lineares, præfloratione dextrorsum obtegentes. *Stamina* 5, in medio tubo inserta, in conum vix os attingentem arcute inclusum conniventia; filamenta brevissima, crassa; antheræ sagittatæ, intus basi glandula viscosa munitæ, cruribus duris solidis quam filamentis sublongioribus, loculis angustissimis brevibus. *Discus* breviter tubulosus, 5-lobus vel 5-partitus, carnosus. *Carpella* libera, brevia, truncata, abrupte lateraliter in stylum constricta, e disco exserta vel ab eo paulo superata, vertice puberula; styli filiformes, superne coaliti, incrassati; stigma ovoideo-clavatum, ope antherarum glandularum cono staminali adhærens; placentæ ad basin bipartitæ, lamellis carpelli lateri ventrali plane adnatis facie dorsali ovulis multiseriatis obsitis. *Fructus* folliculi distincti, breves vel elongati, divaricatum patentes, coriacei vel lignosi, secundum suturam dehiscentes; placentæ maturæ tantum zona angusta rugulosa utrinque secundum suturam percurrente indicatæ, cæterum a folliculi pariete haud distinctæ. *Semina* plurima, fusiformia, subsemiteretia, basi coma stipitata reverse plumosa ornata; raphe filiformis, prominula; testa tenuis; albumen carnosum, strato tenui embryonem circumdans. *Embryo* elongatus, subsemiteres, radicula supra, longiuscula; cotyledones foliaceæ, longitudinaliter contortuplicatæ.—*Arbores* sæpe peraltæ. *Folia* sempervirentia, coriacea. *Flores* parvuli, numerosi, in axillis foliorum in cymas densas congesti, breviter vel brevissime pedicellati, albi vel flavescentes.

Species 3 in Africa tropica.

Key to the species.

- Alabastra cylindrica, 14–20 mm. (7–10 lin.) longa; corollæ lobi oblongo-lineares, tubo distincte longiores; folia in axillis inter costam et nervos secundarios subtus magis minusve pubescentia, efoveolata; seminis arista basi nuda... 1. *africana*.
- Alabastra conica, 6–12 mm. (3–6 lin.) longa; corollæ lobi oblongi, tubo distincte breviores vel ei æquilongi.
Corollæ tubus extra glaberrimus, prope basin constrictus; discus ovarium excedens, 5-crenulatum; folia in axillis inter costam et nervos secundarios subtus glabra, foveolata; seminis arista basi nuda ... 2. *elastica*.
- Corollæ tubus extra minutissime pubescens, infra medium ipsum constrictus; discus ovario brevior, 5-lobus; folia in axillis inter costam et nervos secundarios subtus glabra, efoveolata; seminis arista ab ipsa basi plumosa 3. *latifolia*.

F. africana, Stapf in *Proc. Linn. Soc.* 1900, 2. Arbor 4.5–24 m. (15–80 ped.) alta. *Truncus* erectus, cylindricus; cortex extus cinereus, sublævis, medio fuscus, intus albidus; ramuli teretes vel sub nodos compressi, exsiccando plerumque nigricantes; latex copiosus, albus, coagulando viscosissimus. *Folia* petiolata, forma et magnitudine admodum variabilia; lamina oblonga, rarius ovato-oblonga, basi attenuata vel interdum rotundata, apice breviter et abrupte acuminata, 12–23 cm. (5–9 poll.) longa, 4–9 cm. (1½–3½ poll.) lata, integerrima, margine undulata et exsiccando revoluta, supra glaberrima, sicca plerumque fusca, infra in axillis inter costam et nervos secundarios plerumque pubescens, efoveolata

nervis secundariis utrinque 9-10 (raro 11), subpatulis sub margine arcuato-connexis, tertiariis venisque inconspicuis; petiolus 4-8 mm. (2-4 lin.) longus. *Cymæ* breviter pedunculatæ, multifloræ, congestæ, glabræ; pedunculus 6 mm. (3 lin.) longus; bracteæ parvæ, ovatæ, acutæ vel subacutæ; pedicelli ad 4 mm. (2 lin.) longi. *Flores* flavescentes; alabastra subcylindrica, paululo curvata, 14-20 mm. (7-10 lin.) longa. *Calyx* 3.5 mm. (1 $\frac{3}{4}$ lin.) longus; segmenta late ovata vel elliptica, margine minute ciliolato excepto glabra; glandulæ plures cum unoquoque segmento, lobulatæ. *Corollæ* tubus medio vel paulo infra constrictus, 6-8 mm. (3-4 lin.) longus, glaber; lobi oblongo-lineares, 10-12 mm. (5-6 lin.) longi. *Stamina* medio tubo vel paulo supra inserta; filamenta intus minute tomentella; antheræ acuminatæ, apice minute pilosulæ. *Discus* 5-lobus vel ad basin 5-partitus, ovario $\frac{1}{3}$ brevior. *Fructus* folliculi fusiformes, acute acuminati, semiteretes, ventre applanati, in lateribus utrinque longitudinaliter angulati, ad 20 cm. (8 poll.) longi, angulis 3-4 mm. a sutura (1 $\frac{1}{2}$ -2 lin.) distantibus. *Semina* glabra, 12-16 mm. (6-8 lin.) longa; arista 3-4 cm. (1 $\frac{1}{4}$ -1 $\frac{3}{4}$ poll.) longa, basi nuda, pilis 6-7 cm. (2 $\frac{1}{2}$ poll.) longis.—Schlechter, West-Afr. Kautschuk Exped., 236; Stapf in Hook. Icon. Plant. t. 2696-2697, and in Fl. Trop. Afr. iv. 190; De Wild. in Rev. Cult. Col. x. 74. *Kickxia africana*, Benth. in Hook. Icon. Plant. t. 1276; Henriques in Bol. Soc. Broter. x. (1892) 141; Stapf in Journ. Linn. Soc., xxx. (1894), 90, and in Kew Bull., 1895, 244 cum icone*; K. Schum. in Notizbl. Bot. Gart. und Mus. Berlin, i., 217-221 cum icone*; Warb. in Zeitschr. f. trop. Landwirthsch. (Tropenpfl.) i. 99-103, cum icone* and Kautschukpfl. 110; Lecomte in Rev. Cult. Col. i. 12-19, 41-47, fig. 1, 2 and 14; Preuss in Tropenpfl. iii. 65-71; Jumelle, Les Plantes à Caoutchouc, 68-73, fig. 10*; Preuss in Notizbl. Bot. Gart. und Mus. Berl. ii. 353-360, t. ii.; Schlechter in Tropenpfl. iv. 326-330, et West-Afr. Kautschuk Exped. 41, 158, 160, 194, 202, 206, 235, 236, 307, fig. on p. 238; De Wildeman in Rev. Cult. Col. vii., 633, 634, 747. *K. Zenkeri*, K. Schum. l. c. iii., 81. *K. Gilletii* De Wildeman, l. c. 744 . . .

WEST TROPICAL AFRICA. Sierra Leone, without precise locality, *Scott Elliot*! *Haydon* (follicles and seeds)! near Kukuna on the Scarcies River, *Scott Elliott*, 4506! (fruit-bearing branch, with almost bright green and quite glabrous leaves); Bagroo River, *Mann*, 817! Liberia, Grand Basa, S. John's River, *Dinklage*, 835! Sinô Basin, *Whyte*! Ivory Coast, Dobou, *Jolly*, 174! 1691! Gold Coast, Sehwhi and Wam District, *Armitage*! (barren branches). Koforidua, *Johnson*, 434! E. Akim, *Johnson*, 692! (flowering branches). Prah River, *Johnson*, 925! Togoland, Amedjohve Mountain, *Schlechter*, 12,979. Misahohe, *Baumann*, 555! Dahomey, Adja Were, according to *Hua*. Lower Nigeria, Bonny, *Kalbreyer*, 82! (detached leaves, open follicles and seeds; the follicles are rather less coriaceous than in the other specimens). Opobo, *Holland*, 157! Adiabo, *Holland*, 294! between Ekuke and Abaragba, together with *F. elastica*, according to *Holland*. Cross River, at Itu, *Holland*, 5! Ekure, *Holland*, 160! Cameroons,

* Descriptione et figuris fructuum exceptis.

virgin forest near Victoria, *Preuss*, 1382! Bipinde, Buli, *Zenker*, 2280! 2534! Gaboon, Libreville, *Klaine*, 662! Fernando Po, *Mann*! Lower Congo, Kisantu, *Gillet*!

Flowers were collected in December in the Cameroons, in January in Sierra Leone, in January and February in Gaboon, early in April (in a very young state) on the Cross River. The fruits of the previous year seem to ripen at about the same time. This tree appears to be common in the hill forests of the Agome Mts. and in the Boëm Country, Togoland (*Schlechter*), in the coast region of the Cameroons (*Dr. Preuss*), and in the basin of the Upper Mungo as far as the Bakossi Mts. (*Schlechter*), and on the slopes of the hills near Libreville (*Chalot* in *Le Jardin*, xi., 199). *Lecomte* claims to have discovered a plant identical with *F. africana* of Libreville, still farther south, at Kakamoeka, on the Kouila River; but he remarks that the fruits are rather longer and the stamens somewhat differently shaped.

K. Zenkeri was supposed to differ from *Funtumia africana* in the longer corolla-lobes and the shape of the disc; there is, however, in my opinion, no difference whatever in these respects. *K. Gilletii*, on the other hand, was distinguished from *F. africana* on account of the flowers being smaller; but here again, I find that the size of the corollas comes well within the range of variation exhibited by the flowers of *F. africana*. There is also no difference in the foliage, and unless the fruits should be found to afford more tangible characters, we shall have to consider *K. Gilletii* as identical with *F. africana*.

The rubber obtained from this species is sticky like bird-lime, and therefore worthless.

2. *F. elastica*, *Stapf* in *Proc. Linn. Soc.*, 1900, 2. Arbor ad 30 m. (100 ped.) alta. Truncus erectus, cylindricus; cortex extus pallidus, maculatus; ramuli teretes, exsiccando nigricantes; latex copiosus, coagulando massam elasticam hand viscosam reddens. Folia petiolata; lamina oblonga vel lanceolato-oblonga, basi attenuata, apice in acumen angustum plerumque acutum contracta, 12-21 cm. (5-9 poll.) longa, 3-6 cm. ($1\frac{1}{4}$ - $2\frac{1}{2}$ poll.) lata, integerrima, margine conspicue undulata et exsiccando revoluta, glaberrima, sicca fusca, subtus pallidior, in axillis inter costam et nervos secundarios distincte foveolata, nervis secundariis utrinque 7-11 (10 in specimine "*Preuss*, 1381," in cæteris plerumque 8-9) subpatulis sub margine arcuatim connexis, tertiariis venisque inconspicuis; petiolus 4-10 mm. (2-5 lin.) longus. Cymæ breviter pedunculatæ, multifloræ, congestæ, glabræ; pedunculus ad 6 mm. (3 lin.) longus; bractæ parvæ, late ovatæ, obtusæ vel subacutæ; pedicelli 3-5 mm. ($1\frac{1}{2}$ - $2\frac{1}{2}$ lin.) longi. Flores albi vel flavescentes; alabastra conica, brevía, ad 12 mm. (6 lin.) longa. Calyx 4- $4\frac{1}{2}$ mm. (2- $2\frac{1}{4}$ lin.) longus; segmenta latissima, ovata vel rotundata; glandulæ plerumque 2 cum unoquoque segmento. Corollæ tubus supra basin constrictus, 7-8 mm. ($3\frac{1}{2}$ -4 lin.) longus, glaber; lobi oblongi, obtusi, 5-6 mm. ($2\frac{1}{2}$ -3 lin.) longi. Stamina infra medium tubum inserta; filamenta intus minute tomentella; antheræ acuminatæ, apice minute pilosulæ. Discus 5-partitus, segmentis crenatis, ovarium paulo superans. Fructus

folliculi clausi oblongo-clavati, apice obtusi vel rotundati, sectione transversa elliptica, plane aperti oblongo-elliptici, ad 5 cm. (2 poll.) lati, lignosi, in lateribus vix longitudinaliter angulati, 8-14 cm. (3½-6 poll.) longi. *Semina* glabra, 12-18 mm. (6-9 lin.) longa; arista 3.6-5.4 cm. (1½-2¼ poll.) longa, ad medium nuda, pilis ad 6 cm. (2½ poll.) longis. Schlechter, West-Afr. Kautschuk Exped. 236; Stapf in Hook. Icon. Plant. t. 2694-2695, and in Fl. Trop. Afr. iv. 191; De Wild. in Rev. Cult. Col. x. 74-76, xii. 193-196; Moeller in Tropenpfl. ix. 509-511. *Kickxia elastica*, Preuss in Notizbl. Bot. Gart. u. Mus. Berlin, ii. 353-360, t. i. Schlechter in Tropenpfl. iv. 109-120, 141, 143, vi. 308, 423, 636, vii. 93, and in West-Afr. Kautschuk Exped. 16-19, 96-101, 103, 112, 113, 151-160, 236-247, 257, fig. on p. 99 and opp. pp. 164 and 176; Warburg, Kautschukpfl. 110-112, 153; De Wildeman in Rev. Cult. Col. vii., 633, 634, 743-747. *K. africana*, Stapf in Kew Bull. 1895, 244 cum icone*; K. Schum. in Notizbl. Bot. Gart. und Mus. Berlin, i. 217-221, cum icone*; Warb. in Zeitschr. f. trop. Landwirthsch. (Tropenpfl.) i. 99-103, cum icone,* Kautschukpfl. 110-112, and Plantes à caoutch. 200-205, partly; Lecomte in Rev. Cult. Col. i. 12-19, 41-47, fig. 2*; Jumelle, Les Plantes à Caoutchouc, 68-73, fig. 10;* Thonner in De Wild. and Durand, Plant. Thonner. Congol. xii.; Henriques, Der Kautschuk, 18; tabelle iii.; Reintgen in Tropenpfl. vi. Beih. 2-3, 163-168; Zitzow in Tropenpfl. viii. 228-250, with fig. on p. 232; Stein in Tropenpfl. viii. 597-611; Soskin in Tropenpfl. x. 32-39; non Benth.

WEST TROPICAL AFRICA. Liberia, about 40 miles up the Sinô River, *Sim!* Gold Coast, Mampong Hills, *Johnson*, 255! Sehwhi and Wam District, *Armitage!* (barren branches and a branch bearing very young fruits). Ashanti, Kumassi, *Cummins*, 217! (flowering branch, flowers young and partly deformed). Lagos, Jebu District, *Millen*, 178! 180! and without precise locality, *Denton!* (fruits and seeds, also flowering branches from plants grown in the Trinidad Bot. Garden, raised from those seeds, comm. *Hart!*) *Punch!* Yoruba, Ibadan, *Olubi!* (open follicle and seeds); dense forests between Shagamo and Ibadan, *Schlechter*, 12319. Lower Nigeria, Old Calabar, *Lloyd!* (follicle with seeds); between Ekuke and Abarogba, *Holland*, 158! 159! 161! 162! (flowering and fruiting branches, some of the latter with remarkably small follicles); between Insofan and Obeyon, *Holland*, 243! Cameroons, right bank of Mungo River, between Malende and Nyoke, and between Nyoke and Moyoka, *Preuss*, 1381! Mundame, *Preuss*, 62! between Kumba Ninga and Mokonje, *Preuss*, 6! forests on the upper Mungo River as far as the Bakossi Mts., *Schlechter*. S.E. Cameroons, plentiful in the basin of the Ngoko and Dseha, *Schlechter*, 12746! French Congo, Ubanghi basin, Libengi, *Mardulier!* (leaves and follicles). Congo Free State, Bangala, *Laurent*, 3056! (leaves); Ngali, *Thonner*, 13! Upper Ituri River, *Arnold!* Uganda, Mabira Forest, *Dawe*, 146!

The rubber tree observed by Dr. Preuss near Barombi Station in the Cameroons Hinterland (Tropenpfl. ii. 206) is, according to

* Quoad fructus.

him, probably also identical with *F. elastica*. It is the same tree which was mentioned by him in Danckelmann's Mittheilungen aus den Deutschen Schutzgebieten, ii. 48, as a species of *Ficus*. *F. elastica* flowers in December and January, and matures the fruits from the previous year about the same time. Vernacular name:—Funtum (*Johnson*); Female Funtum (*Armitage*). Ire (*Denton, Millen*). Fishunga (*Schlechter, Balunda Language*).

Dr. Preuss says (Notizbl. Bot. Gart. und Mus. Berlin, II. 355) that the Lagos specimens which he saw differed from those collected by himself in the Cameroons in having smaller and less wavy leaves with fewer lateral nerves and narrower fruits. I can confirm this so far as the size of the leaves and the number of nerves are concerned. The same applies also to all the specimens which I have seen from outside of the Cameroons with the exception of Captain Armitage's and some of Holland's, which have leaves up to 21 cm. (9 in.) by 9 cm. ($3\frac{3}{4}$ in.), and usually 9 (rarely 10 or 11) nerves on each side. A specimen grown in the Royal Gardens from seeds sent from the Gold Coast, exhibits a similar approach to the Cameroons plant. As the flowers and fruits are absolutely identical in both forms, it does not appear at present expedient to distinguish them by varietal names.

This species is one of the most important sources of West African rubber.

3. *F. latifolia*, *Stapf ex Schlechter*, West-Afr. Kautschuk-Exped., 236. Arbor 15–30 m. (50–100 ped.) alta. *Truncus* erectus, basi ad 1 m. (ultra 3 ped.) dimetiens; coma circiter 10 m. (35 ped.) a solo remota; ramuli superne magis minusve compressi, cæterum teretes, minutissime pubescentes vel subglabri, exsiccando nigricantes. *Folia* petiolata; lamina oblonga vel lanceolato-oblonga vel elliptica, basi rotundata vel acuta vel cuneata, apice abrupte acuminata, 14–24 cm. (6–10 poll.) longa, 6–9.5 cm. ($2\frac{1}{2}$ –4 poli.) lata, in gemma sparsim minutissime pubescens, mox glaberrima, margine integerrima, undulata, exsiccando vix revoluta, subtus in axillis inter costam et nervos secundarios efoveolata, nervis secundariis utrinque 10–15 (plerumque 12), tertiariis venisque inconspicuis; petiolus 6–10 mm. (3–5 lin.) longus. *Cymæ* breviter pedunculatæ, multifloræ, congestæ, minutissime puberulæ; pedunculus 4–6 mm. (2–3 lin.) longus; bractæ parvæ, ovatæ, acutæ vel subacutæ; pedicelli 2–4 mm. (1–2 lin.) longi. *Flores* albi; alabastra brevia, elongato-conica, circiter 12–14 mm. (6–7 lin.) longa, extus magis minusve minutissime velutina. *Calyx* $2\frac{1}{2}$ –3 mm. ($1\frac{1}{4}$ – $1\frac{1}{2}$ lin.) longus; segmenta ovata, obtusa vel subacuta, margine minute ciliolata, dorso sparsim minute pubescentia; glandulæ 2 vell, cum unoquoque segmento. *Corollæ* tubus ad $\frac{1}{3}$ supra basin constrictus, 6–8 mm. (3–4 lin.) longus; lobi oblongi, obtusi, 5–8 mm. ($2\frac{1}{2}$ –4 lin.) longi. *Stamina* medio tubo inserta; filamenta minute tomentella, antheræ acuminatæ, apice puberulæ. *Discus* 5-lobus, lobis integris vel crenulatis late rotundatis, ovarii $\frac{3}{8}$ æquans. *Fructus* folliculi divergentes, clausi lanceolati, acuti 12–14.5 cm. (5–6 poll.) longi, aperti 3–4 cm. ($1\frac{1}{4}$ – $1\frac{3}{8}$ poll.) lati, dorso acute bicarinati, carinis a sutura 6 mm. (3 lin.) distantibus, tenuiter lignosis. *Semina* sparse longe sericeo-pilosa, 18–20 mm. (9–10 lin.) longa, arista 22–24 mm. (11–12 lin.) longa, a basi

plumosa, pilis ad 5 cm. (2 poll.) longis. Stapf. in Hook. Ic. Pl. sub tt. 2694-2695. *Kickxia latifolia*, Stapf. in Kew Bull., 1898, 307, in Ann. Mus. Congo, sér. 2, I. i., 42, and ii., 41, and in Fl. Trop. Afr. iv. 192; Preuss in Notizbl. Bot. Gart. u. Mus. Berlin, i, 353-359, fig. A-H on p. 356; Schlechter in Tropenpfl. iv. 30 and West-Afr. Kautschuk-Exped. 63, 64, 236, 307, fig. on p. 125; De Wildeman in Rev. Cult. Col. vii., 633, 634. *K. Scheffleri*, K. Schum. in Notizbl. Bot. Gart. u. Mus. Berlin, iii. 81. *K. congolana*, De Wildem. l. c.

WEST TROPICAL AFRICA: Congo Free State, Lower Congo, Kisanu, *Gillet*, 387! near Nouvelle-Anvers, *Duchesne* 14! near Coquilhatville, *Gentil*! *Schlechter*, 12,596! Bangala, *Dewèvre*, 867! Lake Leopold II. District, Kutu Ibali, valley of the Kiri, *Bollé*! Mission Delhez, *Delhez*! Kassai Distr., near Lusambo, *Luja*!

EAST TROPICAL AFRICA: Uganda, Mawokota, *Dawe*, 236! Entebbe, common in the lake shore forest, *Dawe*! Busero, *Dawe*, 201! Usambara, Lutindi, *Holst*, 3380! (leaves). Derema, *Scheffler*, 176! Island of Zanzibar, Dunga Estate, *Lyne*, 97! near Lake Nyasa, a foliicle, communicated by the *African Lakes Corporation*!

Bolle says it occurs throughout the Lake Leopold II. District. Vernacular name, Bolé or Bobolé (Bolle).

K. Scheffleri was compared by K. Schumann with *Funtumia latifolia*, from which he stated it differed in having smaller, minutely papillose corollas and a somewhat different disc. The delicate indumentum of the corolla is, however, one of the most characteristic features of *F. latifolia*, and as to the alleged differences in the disc, I cannot find them. *K. congolana* was placed close to *K. Scheffleri* by De Wildeman and described as a distinct species mainly on account of its distribution, whilst it was separated from *F. latifolia* for its more or less velvety corollas, those of *F. latifolia* being described as glabrous by De Wildeman. I have, however, pointed out in my original description of *F. latifolia*, that the corolla is very minutely pubescent without.

This species, like *F. africana*, does not seem to yield any serviceable rubber.

O. STAPF.

MISCELLANEOUS NOTES.

Visitors during 1904.—The number of persons who visited the Royal Botanic Gardens during the year 1904 was 1,579,666; that for 1903 was 1,352,546. The average for 1894-1903 was 1,314,341. The total number on Sundays was 675,225, and on week-days 904,441. The maximum number on any one day was 78,226 on August 1, and the smallest 39 on December 21.

The detailed monthly returns are given below :—

January	...	...	...	17,320
February	...	...	...	32,569
March	...	...	...	47,580
April	...	...	...	235,119
May	...	...	...	254,019
June	...	...	...	183,249
July	...	...	...	330,765
August	...	...	...	242,763
September	...	...	...	127,802
October	...	...	...	60,031
November	...	...	...	29,730
December	...	...	...	18,719

Mr. L. B. P. EVANS, B.Sc., of Selwyn College, Cambridge, has been appointed by the Secretary of State for the Colonies, on the recommendation of Kew, Mycologist and Plant Pathologist in the Botanical Division of the Department of Agriculture of the Transvaal.

Mr. WILLIAM ROBSON, a member of the gardening staff of the Royal Botanic Gardens, has been appointed by the Secretary of State for the Colonies, on the recommendation of Kew, Curator of the Botanic Station, Montserrat.

Mr. F. A. STOCKDALE, B.A., of Magdalene College, Cambridge, has been appointed by the Secretary of State for the Colonies, on the recommendation of Kew, Mycologist and Lecturer in Agriculture to the Imperial Department of Agriculture for the West Indies.

Mr. THOMAS JACKSON, a member of the gardening staff of the Royal Botanic Gardens, has been appointed by the Secretary of State for the Colonies, Curator of the Botanic Station, Antigua.

Mr. ALBERT EDWARD BROWN, a member of the gardening staff of the Royal Botanic Gardens, has been appointed by the Secretary of State for India in Council, on the recommendation of Kew, a probationer gardener for employment in the Royal Botanic Gardens, Calcutta.

Mr. W. ROBERTSON BROWN, a laboratory assistant in the Forestry branch of the Royal Indian Engineering College, Cooper's Hill, has been appointed by the Secretary of State in Council, on the recommendation of Kew, a probationer gardener for employment in the Royal Botanic Gardens, Calcutta.

Mr. WILLIAM DON, formerly a member of the gardening staff of the Royal Botanic Gardens, and late Curator of the Botanic Station, Tarkwa, Gold Coast, has been appointed by the Secretary of State for the Colonies, on the recommendation of Kew, Curator of the resuscitated Botanic Station at Old Calabar, Southern Nigeria.

Mr. JAMES ANDERSON, a member of the gardening staff of the Royal Botanic Gardens, has been appointed by the Secretary of State for the Colonies, on the recommendation of Kew, Curator of the Botanic Station, Tarkwa, Gold Coast, in succession to Mr. W. Don.

Mr. WILLIAM ROBERT MUSTOE, a member of the gardening staff of the Royal Botanic Gardens, has been appointed by the Secretary of State for India in Council, on the recommendation of Kew, a probationer gardener for employment in Northern India.

Mr. EDWARD LITTLE, a member of the gardening staff of the Royal Botanic Gardens, has been appointed by the Secretary of State for India in Council, on the recommendation of Kew, a probationer gardener for employment in the Royal Botanic Gardens, Calcutta.

Mr. ERNEST WILLIAM DAVY, a member of the gardening staff of the Royal Botanic Gardens, has been appointed by the Secretary of State for the Colonies, on the recommendation of Kew, Assistant Forester to the British Central Africa Protectorate. Before proceeding to British Central Africa, Mr. Davy received a short course of instruction in meteorology under the supervision of the Meteorological Office.

Mr. P. T. RUSSELL, a member of the gardening staff of the Royal Botanic Gardens, has been appointed by the Secretary of State for India in Council, on the recommendation of Kew, a probationer gardener for employment in the Royal Botanic Gardens, Calcutta.

Retirement of Sir William Thiselton-Dyer.—The late Director retired on December 15, and was succeeded by Lieut.-Col. Prain, I.M.S., F.R.S., Superintendent of the Royal Botanic Gardens, Calcutta, and Director of the Botanical Survey of India.

Sir W. Thiselton-Dyer was appointed Assistant-Director in 1875, and Director in 1885.

On December 16, he introduced his successor to the assembled staff who, with a kind feeling which was warmly appreciated, presented him with the following address :—

“TO SIR WILLIAM T. THISELTON-DYER,

“K.C.M.G., C.I.E., F.R.S.

“On the occasion of your retirement from the position of Director, we, the undersigned members of the Staff of the Royal Botanic Gardens, Kew, desire to express our regret at the severance of the ties which have so long united us and to convey to you our wish that you may be granted health to enjoy for many years the leisure so well earned by your long and strenuous career.

“During the thirty years of your connection with Kew the establishment has undergone many great improvements and extensions mainly due to your persistent efforts. Not the least of these improvements is the beautifying of the Gardens by opening vistas in the woods and by extensive planting throughout the grounds of masses of ornamental shrubs and herbaceous plants.

“Almost every glass-house has been rebuilt on more attractive lines and the completion of the Temperate House was an achievement that marks an epoch. It may be added that the collections of living plants were never richer and never in better condition.

“The Jodrell Laboratory was arranged and equipped, and for a long time worked, under your personal supervision.

“The Herbarium buildings have been greatly extended, and the collections and library are now second to none in the world.

“The Museum buildings have also been enlarged and modified and the collections rearranged under your direction.

“We members of the permanent staff have much cause to be grateful to you for obtaining a favourable revision of our salaries.

“But it is not your work at Kew alone to which we can refer with satisfaction and admiration. The British Colonies and Possessions in all parts of the world are more or less indebted to you for direct aid and for the foundation or support of their Botanical Establishments.

“We also realise the fact that your close devotion to administrative and executive work has limited your opportunities for original research—a great sacrifice to one whom we are proud to

name as the pioneer in this country of modern botanical teaching. Your laboratory classes at South Kensington in the seventies were the first of their kind in England, we believe, and have not been surpassed. Since those days you have exercised a powerful influence in the promotion of Biological Research. The successful career of the Annals of Botany is largely due to your energy, when others hesitated; and the founding of Section K. of the British Association was entirely your own work.

"We put our names to these few words of appreciation of your always thorough work, with an iteration of all good wishes.

"W. BOTTING HERMSLEY, Keeper of Herbarium and Library.

OTTO STAPP, Principal Assistant (Phanerogams).

GEO. MASSEE, Principal Assistant (Cryptogams).

N. E. BROWN, Assistant in Herbarium.

R. A. ROLFE, do. do.

C. H. WRIGHT, do. do.

S. A. SKAN, do. do.

T. A. SPRAGUE, do. do.

A. D. COTTON, do. do.

J. F. DUTHIE, Assistant for India.

M. SMITH, Artist.

D. H. SCOTT, Hon. Keeper, Jodrell Laboratory.

L. A. BOODLE, Assistant in Jodrell Laboratory.

J. MASTERS HILLIER, Keeper of Museums.

J. H. HOLLAND, Assistant in Museums.

W. WATSON, Curator.

W. J. BEAN, Assistant Curator.

J. AIKMAN, Office Assistant.

W. N. WINN, Office Assistant.

J. STOCKS, Private Secretary.

G. DEAR, Storekeeper.

JUSTIN ALLEN, Clerk of the Works.

L. COTTINGHAM BURRELL, Medical Officer.

C. G. NORRIS, Sergeant of Constables.

W. DALLIMORE, Foreman, Arboretum.

W. IRVING, Foreman, Herbaceous Department.

W. HACKETT, Foreman, Tropical Department.

CHAS. P. RAFFILL, Foreman, Temperate House.

A. OSBORN, Foreman, Greenhouse and Decorative Department.

"Royal Botanic Gardens, Kew,

"December 16, 1905."

Sir W. Thiselton-Dyer continues to reside at Kew till March 31 next and to act till that date as Botanical Adviser to the Secretary of State for the Colonies, as Technical Adviser in Botany to the Board of Agriculture and Fisheries, and to take charge of India Office work.

Kew Bulletin.—For some years this publication has been unfortunately in a state of dormant vitality. The continued encroachment of administrative and official work has made it impracticable for the Director to give the necessary time to its preparation. It has not been possible to do more than issue the routine annual appendices, a circumstance which has led the Bulletin to be humorously but not inaccurately described as succumbing to “appendicitis.”

It is now proposed to issue the available matter on hand in one or more numbers for each year. This will at any rate allow the annual volumes to be bound, and will at any rate complete the record of some branches of the activity of the establishment.

Index Floræ Sinensis.—The concluding part of the third volume of this work (forming vol. xxxvi. of the *Journal [Botany] of the Linnean Society*) has been issued with the following Historical Note by Sir W. Thiselton-Dyer :—

“The completion of an undertaking which has been on hand for some twenty years, has far exceeded the limits originally assigned to it, and must, I fear, have long ago exhausted the patience of the Linnean Society, invites, if it does not almost demand, a few words of explanation as to its history.

“As long ago as 1878 I was invited to deliver before the Royal Geographical Society a lecture which was in substance an attempt to review the knowledge existing at the time of the Earth’s flora. When I came to the vast territory occupied in the Old World by the Chinese Empire, I could only quote the statement made four years earlier by the well-known botanist, the late Dr. Hance :—

“‘While M. Maximowicz’s excellent and very complete ‘Index Floræ Pekinensis’ provides a good catalogue of the flora of the Chinese metropolis and its vicinity, and Mr. Bentham’s classical ‘Floræ Hongkongensis’ has acquainted us with the principal constituents of that of the extreme South-east of the Empire, nothing whatever of a scientific character has yet to my knowledge been written on the vegetation of the districts intermediate to those two points, which are separated by 17° of latitude, or of the various ports of trade along the coast or on the Yangtse.’

“It seemed to me that a beginning might at any rate be made to remedy this conspicuous defect in our knowledge of the vegetation of the Old World, and that a list of Chinese plants which had actually been collected would throw some light on the character of the Chinese Flora and would afford a starting point for fresh research.

“I accordingly in December, 1883, made the following appeal to the Government Grant Committee of the Royal Society :—

“‘To ask for appointment of a Committee to report on our present knowledge of the Flora of China. It is believed that the national herbaria contain a considerable accumulation of material, which it is desirable should be catalogued after the

manner of the Botany of Godman and Salvin's '*Biologia Centrali-Americana*.' Such a catalogue would embody descriptions of all undescribed species of which material is available, and references to the widely scattered published notices of Chinese plants would be intercalated in their proper place. The report would therefore give a complete view from all readily accessible sources of our present knowledge of the Chinese Flora. . . . Our present ignorance of the vegetation of China is an insuperable bar to any rational attempt at generalisation with regard to the distribution of the plants of the Palearctic region.'

"The application was acceded to : a Committee was appointed consisting of Mr. J. Ball, Mr. Carruthers, Mr. Thiselton-Dyer, and Prof. Oliver, and a grant of £200 was placed at its disposal.

"The first meeting of the Committee was held at the Royal Society on February 7, 1884. The following passage is extracted from the Minutes :—

"'It was stated that Mr. F. B. Forbes, F.L.S., had as early as 1875, with the paid assistance of Mr. W. B. Hemsley and others, made considerable progress in cataloguing the Chinese plants preserved in the Herbaria of the Royal Botanic Gardens, Kew, and of the British Museum, and that he was actively engaged in arranging his material.'

"Mr. Forbes attended, by invitation, the next meeting of the Committee on February 14 following. He offered very liberally to co-operate with it, and it was agreed to employ Mr. Hemsley to carry on the work.

"At subsequent meetings the form in which the Catalogue should be drawn up was settled, and in 1885 the Chairman, Mr. John Ball, addressed on its behalf the following letter to the President of the Linnean Society :—

"10 Southwell Gardens, London, S.W.

"13 May, 1885.

"SIR,

"A Committee consisting of Mr. Ball, Professor Oliver, Mr. Carruthers, and Mr. Thiselton-Dyer, was appointed last year by the Government Grant Committee of the Royal Society to draw up a Report on our present knowledge of the Flora of China.

"The Committee has since been joined, at its invitation, by Mr. Forbes, F.L.S., who has most liberally offered his personal assistance, and placed at its disposal his valuable and extensive manuscript collections and notes.

"The Committee has further engaged the services of Mr. Hemsley, F.L.S., to co-operate in drawing up the Report, and he has prepared a specimen dealing with the Ranunculaceæ to its entire satisfaction.

"The Committee now finds itself in a position to press on the work with considerable despatch, and feels confident that, by affording for the first time a comprehensive view of the vegetation of one of the most interesting of existing botanical regions,

it will supply invaluable aid for further research, as well to the student of physiography as to travellers, diplomatic agents and missionaries abroad.

"The Committee is anxious that the printing should proceed *pari passu* with the preparation of the Report, and would deem it an advantage that it should be issued to the public under the auspices of the Linnean Society.

"I, therefore, on behalf of the Committee, beg to offer the Report to the Council of the Linnean Society on the following conditions :—

"1. The Committee to have placed at its disposal an entire volume of the botanical series of the Journal of the Society.

"2. The Committee to pay the entire cost of setting the Report in type, and of correcting the press.

"3. The Committee to be at liberty to print off at its own cost 150 copies to remain at its disposal.

"4. The Linnean Society to bear the cost of press-work for copies issued to Fellows, and for stock for sale by the Society.

"5. Plates illustrating species of exceptional interest may be included in the Report, at the discretion of the Committee, on the same terms as those above stated with regard to the letter-press.

"The Committee suggests that the Report may be issued in parts to the Fellows.

"I have the honour to be, Sir,

"Your obedient Servant,

"(Signed) JOHN BALL.

"The President of the Linnean Society.

"To these proposals the Council agreed, and Parts 1 and 2 of the Enumeration were issued in 1886. Copies of these and subsequent ones were freely distributed amongst English residents in China, with the result of inducing many to assist in the work of collecting specimens. Amongst the earlier was Dr. Henry, at the time an officer in the Chinese Imperial Maritime Customs. Down to the time of his leaving China in 1900, the collections made by this indefatigable botanist reached 15,700 numbers, each represented by numerous duplicates and amounting in all to some 150,000 sheets. Henry's collections revealed the existence of a flora of surprising and unexpected richness, and raised problems of geographical distribution of the highest interest.

"The Committee had hoped that the Catalogue they contemplated might be contained in a single volume of the Society's Journal. But it speedily became clear that it would far exceed those limits. It was further evident that the whole undertaking would be more costly and laborious than was originally contemplated. In addition to three grants amounting in all to £700

obtained from the Government Grant Committee of the Royal Society, further aid amounting to £150 was therefore obtained from the British Association, and progress reports were presented to that body in 1887, 1888, and 1889. The total sum received and expended by the Committee on the undertaking up to 1891 amounted to £850.

"In 1890 Mr. Hemsley was appointed to the post of Principal Assistant in the Herbarium of the Royal Botanic Gardens, Kew, and his official duties precluded his devoting himself any longer to the work. The completion therefore only became possible by the co-operation, under Mr. Hemsley's general supervision, of various botanists whose names stand at the heads of their several contributions. From this point onwards the cost of printing and publication has been exclusively borne by the Linnean Society.

"During their life-time (for both unhappily passed away during the progress of the work) the Committee met with the kindest sympathy and assistance from M. C. J. Maximowicz of the Académie Impériale of St. Petersburg, who had long been engaged on the elaboration of the collections made by Russian travellers in China, and from M. Franchet of the Muséum d'Histoire Naturelle at Paris, who was occupied in describing and publishing the extremely rich collections made by the French missionaries in Yunnan.

"The following letter affords an interesting testimony to the importance Maximowicz attached to the Enumeration.

"Petersburg Botanic Garden,
"September 15, 1885.

"DEAR SIR,

"You have caused me a most agreeable surprise by the gift of the first fasciculus of Messrs. Forbes and Hemsley's most important enumeration of the flora of China. I need not tell you that it will be a constant and most useful source of reference to me and that I am extremely grateful for this laborious and well-executed undertaking which will save me an immense deal of work, when occupied with my own work on the neighbour-floras. The interest I take in it is still more lively through the important set of Dr. Henry's Hupeh plants, recently received from the Kew Herbarium, in which I find quite a number of the novelties. It appears, however, that the first orders were already printed when Dr. Henry's collection reached Kew.

"What a pity it is that our esteemed Dr. Hance did not live to see the commencement of a work which would have elicited his most lively interest and approval.

"Believe me, &c.

"(Signed) C. J. MAXIMOWICZ.

"The late Baron Richthofen, the greatest authority on the physical geography of China, was no less appreciative of the value of the work,

"Berlin W., Kurfürstenstrasse, 117,
"January 20, 1889.

"MY DEAR Mr. THISELTON-DYER,

"It has been a very pleasant surprise to me, this morning, to receive from you the 'Index Floræ Sinensis.' I thank you sincerely for this kind token of remembrance.

"It is of great value to have now a Flora of China embodying all the species known from that country. You have evidently succeeded at Kew to get up a very complete collection. At the same time, in looking over the localities mentioned in the book, it strikes me that large portions of China are still unexplored botanically. There remains a splendid field for a good collector in the Tsinking mountains, the province of Sz'-chwan, and chiefly its elevated regions west of Chêng-tu-fu. Work in those parts will be greatly facilitated by the solid foundation laid through the work of Forbes and Hemsley.

"Yours very truly,

"(Signed) F. RICHTHOFEN.

"From the circumstances of the case the enumeration of the species, of which we now possess material or know of the existence in other herbaria, is admittedly unequal. The number of those for instance contained in Part I. would probably from present knowledge have to be increased by a third. This has been as far as possible remedied by the list drawn up by Miss M. Smith of the new species published during the progress of the work and of those already described whose area has since been found to extend to China.

"The usefulness of the whole work has been enormously enhanced by the complete index of all names cited including synonyms. It contains some 17,000 entries, and is due to the indefatigable industry of Mr. Daydon Jackson, the Society's General Secretary.

"No useful purpose would be served by an attempt to specify all those who have supplied the material which has been used in preparing the Enumeration. Their names are given throughout under the species they contributed. Full particulars for the most part will be found about them in Bretschneider's exhaustive "History of European Botanical Discoveries in China," published in 1888.

"A few exceptions must, however, be made. Dr. Hance who, to use the words of Bretschneider 'has connected his name for all time with the flora of China,' died June 22, 1886, as already noticed, after the appearance of the first part. His Herbarium of Asiatic plants containing upwards of 22,000 species was acquired by the British Museum.

"Dr. Henry's important collections were, as also already noticed, not available for the first part and only to a small extent for the second. From that point they were continuously drawn upon as they successively reached this country.

"Dr. Henry also obtained for the Kew Herbarium Dr. Ernst Faber's important collection from Mt. Omei as well as Morse's from Kwangsi and Ducloux's from Yunnan. Faber's own herbarium was afterwards destroyed by fire. His plants are taken up in the Enumeration from the fifth part onwards.

"The extraordinary richness of the flora of Western and Central China as revealed by Henry's collections, induced Messrs. Veitch to send out E. H. Wilson to make further botanical explorations. He made two journeys; the first in 1899, when he arrived at Szemao to see Henry, and the second in 1903. Messrs. Veitch and Son, with a liberality worthy of their distinguished firm, have presented to the Kew Herbarium a complete set of Wilson's plants. Some are taken up in the later parts of the Enumeration.

"In 1875 Mr. Hemsley had drawn up a list of the Chinese plants in the Kew Herbarium for Mr. Forbes, and believed it to have contained between 4,000 to 5,000 species. The present Enumeration contains 8,271, of which 4,230 are endemic or not known to occur outside the Chinese Empire. The most moderate estimate cannot put the whole flora as containing less than 12,000 species.

"It only remains in bringing this note to a conclusion to add a few particulars as to the bibliography which have been supplied by Mr. Hemsley.

"With regard to the literature cited, it may be useful to explain two or three points which might not otherwise be quite clear. Throughout, the '*Mélanges Biologiques*' is cited for Maximowicz's species, though in most instances they were originally published in the '*Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg*.' The references to Franchet's '*Plantæ Davidianæ*' are to the repaged issue of the '*Première Partie*,' and not to the original pages in the '*Nouvelles Archives du Muséum*.' On the other hand, the pages are given of the '*Annales Musei Botanici Lugduno-Batavi*' for Miquel's '*Prolusio Floræ Japonicæ*,' of which there is a repaged edition. Maximowicz's '*Ad Floræ Asiæ Orientalis cognitionem meliorem Fragmenta*' is sometimes cited under this title, and sometimes the references are direct to the '*Bulletin de la Société Impériale des Naturalistes de Moscou*,' but the pagination is the same in both. Siebold and Zuccarini's '*Floræ Japonicæ Familiæ Naturales . . .*' originally appeared in the Münchener '*Abhandlungen*,' vol. iv. 1844-6, and the references are sometimes to the pages of the re-issue and sometimes to the consecutive numbers of the plants enumerated therein. Bunge's '*Enumeratio Plantarum quas in China Boreali collegit*' was published in the '*Mémoires présentées à l'Académie de St. Pétersbourg par divers Savans*,' ii. 1835, but the references in the following '*Index*' are to a repaged copy. Lastly, the original edition of Loureiro's '*Flora Cochinchinensis*' is the one cited where not otherwise stated.

"W. T. THISELTON-DYER.

"Kew,
"December, 1905."

An interesting addition to the Library.—Through the liberality of the Bentham Trustees the library has been enriched by a copy of the sumptuous facsimile reproduction of the famous Dioscoridian Codex which is preserved in the Imperial Library of Vienna. The title reads as follows : *Dioscurides. Codex Aniciae Julianae picturis illustratus, nunc Vindobonensis Med. Gr. I. phototypice editus*. The work forms vol. x. of the *Codices Graece et Latini photographice depicti*, edited by Dr. de Vries, Librarian at the University of Leyden. Besides the 491 folios reproduced from the MS. there are prefatory chapters contributed by Dr. von Premenstein, Prof. K. Wessely and others, and the whole is bound in two parts in heavy polished oak boards.

The original manuscript was executed at Constantinople about the year 512 A.D., for the Princess Anicia Juliana, daughter of the Emperor Flavius Anicius. It is therefore sometimes referred to as the Constantinopolitan MS. to distinguish it from another known as the Neapolitan, which is preserved at Naples, and is believed to be even more ancient. The MS. was brought to Vienna by Busbequius about the year 1560. At the instigation of the Empress Maria Theresa and under the supervision of Jacquin copper-plates were prepared from the illustrations in the MS. in 1763, but, according to Daubeny, only two impressions from these were struck off. One, containing only 140 engravings, came into the possession of Linnæus and is now the property of the Linnean Society of London. The other, which contained 409 engravings, was presented by Jacquin to Sibthorp, and is now at Oxford.

The size of the folios in the Vienna Codex, judging from the reproductions, is about $13\frac{1}{2}$ inches high by $11\frac{1}{2}$ inches broad. Some are evidently much dilapidated and sometimes reduced to mere fragments. All at present existing, both illustrations and text, have been faithfully reproduced. The illustrations are very unequal in point of merit. Some, considering the time of their execution, are excellent, while others are very crude and remind one of the rough, partly imaginary figures in some of the late fifteenth century herbals.

Dioscorides flourished about the time of the younger Pliny, who perished in the eruption of Vesuvius, August 25, 79 A.D. His writings were first published, in a Latin translation, at Cologne in 1478, and for the first time in Greek at the famous Aldine press in Venice in 1499, and again in 1518. The Aldine editions are in octavo and have no illustrations. Subsequently numerous editions founded on the writings of Dioscorides appeared, some of them finely illustrated, especially the Valgrisian editions of Mattioli.

The importance to botanists of obtaining access through the present reproduction to the Vienna Codex is that it supplies the earliest authentic evidence of the traditional belief as to the plants known by the names which Dioscorides actually cited. It cannot be doubted that the identification of later commentators went very far-a-field.

Research in Jodrell Laboratory in 1905 :—

Brown, H. T.—The Reception and Utilisation of Energy by a Green Leaf. The Bakerian Lecture delivered at the Royal Society, March 23, 1905. (*Nature*, March 30, 1905, pp. 1-15, Fig. 1.)

Four Papers constituting the Bakerian Lecture :—

Brown, H. T., and Escombe, F.—Researches on some of the Physiological Processes of Green Leaves, with Special Reference to the Interchange of Energy between the Leaf and its Surroundings. (*Proc. Roy. Soc.*, Vol. 76 B., pp. 29-111, Fig. 1.)

Brown, H. T., and Escombe, F.—On a New Method for the Determination of Atmospheric Carbon Dioxide, based on the Rate of its Absorption by a Free Surface of a Solution of Caustic Alkali. (*Proc. Roy. Soc.*, Vol. 76 B., pp. 112-117, with Fig. in text.)

Brown, H. T., and Escombe, F.—On the Variations in the Amount of Carbon Dioxide in the Air of Kew during the years 1898-1901. (*Proc. Roy. Soc.*, Vol. 76 B., pp. 118-121.)

Brown, H. T., and Wilson, W. E.—On the Thermal Emissivity of a Green Leaf in Still and Moving Air. (*Proc. Roy. Soc.*, Vol. 76 B., pp. 122-137, with Figs. 1 and 2.)

Maslen, A. J.—The Relation of Root to Stem in Calamites. (*Ann. Bot.*, Vol. XIX., pp. 61-73, tt. 1 and 2, and Fig. in text.)

Massee, G.—On the Presence of Binucleate Cells in the Ascomycetes. (*Ann. Bot.*, Vol. XIX., pp. 325 and 326, with Fig. in text.)

Massee, G.—A New Orchid Disease. (*Gard. Chron.*, Vol. 38, pp. 153, 154, with Fig. in text.)

Salmon, E. S.—Further Cultural Experiments with 'Biologic Forms' of the Erysiphaceae. (*Ann. Bot.*, Vol. XIX., pp. 125-148.)

Salmon, E. S.—Cultural Experiments with an *Oidium* on *Euonymus japonicus*, Linn. f. (*Annales Mycologici*, Vol. III., pp. 1-15, t. 1.)

Salmon, E. S.—Preliminary Note on an Endophytic Species of the Erysiphaceae. (*Annales Mycologici*, Vol. III., pp. 82, 83.)

Salmon, E. S.—On Specialization of Parasitism in the Erysiphaceae. III. (*Annales Mycologici*, Vol. III., pp. 172-184.)

Salmon, E. S.—The Erysiphaceae of Japan. II. (*Annales Mycologici*, Vol. III., pp. 241-256.)

Salmon, E. S.—On two supposed species of *Ovularia*. (*Journ. Bot.*, Vol. 43, pp. 41-44, t. 469. Additional note, *ibid.* pp. 99-100.)

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Erratum.—Page 43, 16th line from top, for "Mr. W. T. S. Hemsley" read "Mr. W. B. Hemsley."

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